AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for negative feedback controlling electrical power delivered to an electrical load comprising:

- monitoring electrical power delivered to said load, thereby generating an analogue monitoring signal;

- analog to digital converting said analog monitoring signal to generate a digital monitoring signal;

- forming in dependency of said digital monitoring signal and of a preselected rated value signal a control deviation signal; and

- adjusting said electrical power delivered and monitored in function of said control deviation signal, characterized by performing said analog to digital converting at least twice in parallel.

2. (currently amended) A method for negative feedback controlling electrical power delivered to an electrical load comprising:

- monitoring electrical power delivered to said load, thereby generating a monitoring signal;

- forming in dependency of said monitoring signal and of a rated value signal a control deviation signal;

- adjusting said electrical power delivered and monitored in function of said control deviation signal by means of pulse-width modulation with a predetermined pulse repetition period;

- said pulse-width modulation being adjustable with a predetermined minimum pulse-width adjustment increment; and

- ~~characterized~~ wherein by calculating from said control deviation signal a desired pulse-width adjustment increment and applying an integer multiple of said predetermined minimum pulse-width adjustment increments to said pulse-width modulation ~~and/~~or a pulse of predetermined length so often in time, that adjustment by said integer multiple ~~and/~~or said pulse accords, averaged over time, with a pulse-width modulation adjustment with said desired pulse-width adjustment increment.

3. (currently amended) ~~A~~ The method according to claim 2, ~~characterized by~~further comprising the steps of:

- generating by said monitoring an analog monitoring signal;
- analog to digital converting said analog monitoring signal to generate a digital monitoring signal; and
- performing said analog to digital converting at least twice in parallel.

4. (currently amended) The method ~~of~~ according to claim 1 ~~or 3~~, ~~characterized by~~ further comprising the steps of performing each of said analog to digital convertings with oversampling.

5. (currently amended) The method according to ~~of~~ claim 1~~, 3 or 4~~, wherein~~characterized by the fact of performing~~ said analog to digital convertings are performed at a respective equal sampling rate.

6. (currently amended) The method ~~of~~ according to claim 5, ~~characterized by performing~~ wherein said analog to digital convertings are performed at a constant sampling rate.

7. (currently amended) The method ~~of~~ according to claim 1~~, 3 to 6~~, wherein ~~characterized by performing~~ said analog to digital convertings are performed synchronously.

8. (currently amended) The method ~~of one of~~according to claims 1~~, 3 to 7~~, ~~characterized by performing~~ wherein each of said analog to digital convertings are performed with a sampling rate of at least 100 kHz.

9. (currently amended) The method ~~of~~ according to claim 2~~-or 3~~, ~~characterized by~~further comprising the steps of selecting said predetermined length equal to said predetermined minimum pulse-width adjustment increment.

10. (currently amended) The method ~~of one of the~~ according to claims 2~~, 3 to 9~~, ~~characterized by~~further comprising the steps of applying said pulse of predetermined length as a pulse-frequency modulation with only a variable pulse repetition frequency.

11. (currently amended) The method ~~of~~ according to claim 10, ~~characterized by~~further comprising the steps of modulating pulse repetition period of said pulse-frequency modulation by an integer multiple of said pulse repetition period of said pulse-width modulation.

12. (currently amended) The method ~~of one of~~ according to claims 2~~, 3 to 10~~, ~~characterized by~~further comprising the steps of adjusting pulse-width of said pulse-width modulation by an integer multiple of said predetermined minimum pulse-width adjustment increment, integrating the resulting control deviation in time or adding the resulting control deviation in subsequent pulse-repetition periods, and applying said single pulse of predetermined length, whenever the result of said integrating or of said adding accords with a control deviation which necessitates adjusting said pulse-width by a predetermined minimum pulse-width adjustment increment.

13. (currently amended) The method ~~of one of~~ according to claims 1~~-to 12~~, characterized by controlling electrical power of at least 100 VA.

14. (currently amended) The method ~~of one of~~according to claims 1~~-to 13~~, ~~characterized by~~further comprising the steps of monitoring said electrical power by monitoring current or voltage delivered to said load.

15. (currently amended) A negative feedback-controlled power supply comprising:

- a monitoring unit monitoring electric power delivered to a load and having an analog monitoring signal output, an analog to digital converter unit having an analog signal input being operationally connected to said analog monitoring signal output and having a digital monitoring signal output,
- a controller unit with a digital signal input operationally connected to said digital monitoring signal output and further having a control output, further comprising a difference forming unit, a first input thereof being operationally connected to said digital monitoring signal input, a second input thereof being operationally connected to an output of a rated value signal source and further having a difference signal output operationally connected to said control output,
- a power adjusting unit with a power input, a power output and a control input, said power output being operationally connected to an input of said monitoring unit and being operationally connectable to said load, the control input being operationally connected to said control output,

~~characterized by the fact that~~wherein

said analog to digital converter unit comprises at least two analog to digital converters, the analog inputs thereof being operationally connected to said analog signal input and having a digital signal output each being operationally connected to said digital monitoring signal output, further comprising a sampling/converting control unit with at least two sampling/converting control outputs, said at least two sampling/converting control outputs being operationally connected respectively to a sample/converting control input of each of said at least two converters, said sampling/converting control unit generating at said at least two sampling/converting control outputs sample and conversion enabling signals.

16. (currently amended) A negative feedback-controlled power supply, comprising:

- a monitoring unit monitoring electric power delivered to a load and having a monitoring signal output,
- a controller unit with a monitoring signal input operationally connected to said monitoring signal output and further having a control output, a difference forming unit, a first input thereof being operationally connected to said monitoring signal input, a second input thereof being operationally connected to an output of a rated value signal source, and further having a difference signal output, a pulse-width control unit with a pulse-width control input operationally connected to said difference signal output and having an output operationally connected to said control output and generating at said control output a pulse-width modulated control signal;
- a power adjusting unit with a power input, a power output and a control input, said power output being operationally connected to an input of said monitoring unit and being operationally connectable to a load, the control input being operationally connected to said control output, said power adjusting unit further comprising a power-pulse-width modulation unit with a pulse-width control input operationally connected to said control input and with an input operationally connected with said power input and with an output operationally connected to said power output, said power-pulse-width modulation unit transmitting a signal applied to said power input, pulse-width modulated to said power output with a predetermined minimum pulse-width adjustment increment,

~~characterized by the fact that~~wherein

said controller unit further comprises a calculation unit, one calculation input thereof being operationally connected to said difference signal output, the calculation output thereof being operationally connected to said pulse-width control input and calculating in dependency of a signal applied to said calculation input a desired pulse-width adjustment increment at said pulse-width modulation unit, said calculation unit generating at said calculation output a first control signal controlling adjustment of pulse-width of said pulse-width control unit by an integer number of said predetermined minimum pulse-

width adjustment increment according to an integer of the ratio of said desired pulse-width adjustment increment and said predetermined minimum pulse-width adjustment increment, and generating at said calculation output a second control signal controlling frequency of a frequency modulated pulse train with a pulse of predetermined pulse-width according to a fraction of the ratio of said desired pulse-width adjustment increment and said predetermined minimum pulse-width adjustment increment.

17. (original) The negative feedback control power supply according to claim 16, characterized by the fact that said monitoring signal output is an analog monitoring signal output and said monitoring signal input is a digital monitoring signal input and further comprising an analog to digital converter unit interconnected between said analog monitoring signal output and said digital monitoring signal input and comprising at least two analog to digital converters, the analog inputs thereof being operationally connected to said analog monitoring signal output and having a digital signal output each being operationally connected to said digital monitoring signal output and further comprising a sampling/conversion control unit with at least two sampling/converting control outputs, said at least two sampling/converting control outputs being operationally connected respectively to a sample/converting control input at each of said at least two converters, said sampling/conversion control unit generating at said at least two sampling/converting control outputs sample and convert enabling signals.

18. (currently amended) The power supply according to ~~one of~~ claims 15~~-to-17~~, wherein said power adjusting unit adjusting a power delivered to said load of at least 100 VA.

19. (currently amended) The power supply according to ~~one of~~ claims 15~~-to-18~~, wherein a power at said power output is controlled with a resolution of at least 10 ppm, preferably with a resolution of at least 1 ppm.

20. (currently amended) The power supply according to claim 15, further comprising ~~A~~a synchrotron system with electron beam-controlling magnets, said magnets being electrically supplied by said power supplies. ~~according to one of the claims 15 to 19.~~

21. (New) A method for negative feedback controlling electrical power delivered to an electrical load comprising:

- monitoring electrical power delivered to said load, thereby generating a monitoring signal;

- forming in dependency of said monitoring signal and of a rated value signal a control deviation signal;

- adjusting said electrical power delivered and monitored in function of said control deviation signal by means of pulse-width modulation with a predetermined pulse repetition period;

- said pulse-width modulation being adjustable with a predetermined minimum pulse-width adjustment increment; and

wherein by calculating from said control deviation signal a desired pulse-width adjustment increment and applying an integer multiple of said predetermined minimum pulse-width adjustment increments to said pulse-width modulation and a pulse of predetermined length so often in time, that adjustment by said integer multiple and said pulse accords, averaged over time, with a pulse-width modulation adjustment with said desired pulse-width adjustment increment.

22. (New) The method according to claim 21, further comprising the steps of:

- generating by said monitoring an analog monitoring signal;

- analog to digital converting said analog monitoring signal to generate a digital monitoring signal; and

- performing said analog to digital converting at least twice in parallel.

23. (New) The method according to claim 22, further comprising the steps of performing each of said analog to digital convertings with oversampling.

24. (New) The method according to claim 22, wherein said analog to digital convertings are performed at a respective equal sampling rate.

25. (New) The method according to claim 24, wherein said analog to digital convertings are performed at a constant sampling rate.

26. (New) The method according to claim 22, wherein said analog to digital convertings are performed synchronously.

27. (New) The method according to claim 22, wherein each of said analog to digital convertings are performed with a sampling rate of at least 100 kHz.

28. (New) The method according to claim 21, further comprising the steps of selecting said predetermined length equal to said predetermined minimum pulse-width adjustment increment.

29. (New) The method according to claim 21, further comprising the steps of applying said pulse of predetermined length as a pulse-frequency modulation with only a variable pulse repetition frequency.

30. (New) The method according to claim 22, further comprising the steps of modulating pulse repetition period of said pulse-frequency modulation by an integer multiple of said pulse repetition period of said pulse-width modulation.

31. (New) The method according to claim 21, further comprising the steps of adjusting pulse-width of said pulse-width modulation by an integer multiple of said predetermined

minimum pulse-width adjustment increment, integrating the resulting control deviation in time or adding the resulting control deviation in subsequent pulse-repetition periods, and applying said single pulse of predetermined length, whenever the result of said integrating or of said adding accords with a control deviation which necessitates adjusting said pulse-width by a predetermined minimum pulse-width adjustment increment.

32. (New) The method according to claim 21, characterized by controlling electrical power of at least 100 VA.

33. (New) The method according to claim 21, further comprising the steps of monitoring said electrical power by monitoring current or voltage delivered to said load.